

What is claimed is:

1. A glass fiber air filtration media comprising:
glass fibers; and
plastic-containing bonding fibers uniformly blended together with the glass fibers
and bonding at least a portion of the glass fibers together by forming bonds at points of
intersection between the glass fibers and the plastic-containing bonding fibers.
2. The glass fiber air filtration media of claim 1, wherein the air filtration media has
a first major side and a second major side;
a thermoplastic non-woven facing layer bonded to one of the two major sides of
the air filtration media.
3. The glass fiber air filtration media of claim 2, wherein the thermoplastic non-
woven facing layer comprises a polypropylene polymer.
4. The glass fiber air filtration media of claim 1, wherein the glass fibers are rotary
glass fibers.
5. The glass fiber air filtration media of claim 1, wherein the glass fibers are loose-
fill glass fibers.
6. The glass fiber air filtration media of claim 1, wherein the glass fibers have an
average fiber diameter not greater than about 5 microns.
7. The glass fiber air filtration media of claim 1, wherein the glass fibers have an
average fiber diameter not greater than about 3 microns.
8. The glass fiber air filtration media of claim 1, wherein the glass fibers have an
average length not greater than about 76 mm (3 inches).

9. The glass fiber air filtration media of claim 1, wherein the glass fibers have an average length not greater than about 51 mm (2 inches) in length.
10. The glass fiber air filtration media of claim 1, wherein the plastic-containing bonding fibers having an average fiber diameter not greater than about 20 microns.
11. The glass fiber air filtration media of claim 1, wherein the plastic-containing bonding fibers having an average fiber diameter of about 16 microns.
12. The glass fiber air filtration media of claim 1, wherein the plastic-containing bonding fibers having an average length between about 10 to 127 mm (0.4 to 5 inches).
13. The glass fiber air filtration media of claim 1, wherein the plastic-containing bonding fibers having an average length of not greater than about 102 mm (4 inches).
14. The glass fiber air filtration media of claim 1, wherein the plastic-containing bonding fibers are between about 5 to 50 wt. % of the air filtration media.
15. The glass fiber air filtration media of claim 1, wherein the plastic-containing bonding fibers are between about 10 to 30 wt. % of the air filtration media.
16. The glass fiber air filtration media of claim 1, wherein the variation in the gram weight of the air filtration media is $\pm 5\%$ or less.
17. The glass fiber air filtration media of claim 1, wherein the plastic-containing bonding fibers are bi-component thermoplastic polymer fibers.
18. The glass fiber air filtration media of claim 1, wherein the plastic-containing bonding fibers are mono-component thermoplastic polymer fibers.

19. The glass fiber air filtration media of claim 1, wherein the air filtration media is substantially formaldehyde-free.
20. The glass fiber air filtration media of claim 17, wherein the bi-component thermoplastic polymer fibers comprise:
 - a core material; and
 - a sheath material, the sheath material having a melting point temperature that is lower than the melting point temperature of the core material, wherein the sheath material forms the bonds at the points of intersection between the glass fibers and the plastic-containing bonding fibers.
21. The glass fiber air filtration media of claim 20, wherein the core material and the sheath material are both thermoplastic polymers
22. The glass fiber air filtration media of claim 20, wherein the core material is a mineral and the sheath material is a thermoplastic polymer.
23. The glass fiber air filtration media of claim 20, wherein the core material and the sheath material are same thermoplastic polymer but of different formulation.
24. An air filter fabricated from a glass fiber air filtration media, wherein the glass fiber air filtration media comprises:
 - glass fibers, and
 - plastic-containing bonding fibers uniformly blended together with the glass fibers and bonding at least a portion of the glass fibers together by forming bonds at points of intersection between the glass fibers and the plastic-containing bonding fibers.
25. The air filter of claim 24, wherein the air filter is a bag filter.
26. The air filter of claim 25, wherein the air filter is a cube filter.

27. The air filter of claim 24, wherein the air filter is a pocket filter.
28. The air filter of claim 24, wherein the air filter is a panel filter.
29. The air filter of claim 24, wherein the air filtration media has a first major side and a second major side;
a polyethylene non-woven facing layer bonded to one of the two major sides of the air filtration media.
30. The air filter of claim 24, wherein the glass fibers are rotary glass fibers.
31. The air filter of claim 24, wherein the glass fibers are loose-fill glass fibers.
32. The air filter of claim 24, wherein the glass fibers have an average fiber diameter not greater than about 5 microns.
33. The air filter of claim 24, wherein the glass fibers have an average fiber diameter not greater than about 3 microns.
34. The air filter of claim 24, wherein the glass fibers have an average length not greater than about 76 mm (3 inches).
35. The air filter of claim 24, wherein the glass fibers have an average length not greater than about 51 mm (2 inches) in length.
36. The air filter of claim 24, wherein the plastic-containing bonding fibers having an average fiber diameter not greater than about 20 microns.
37. The air filter of claim 24, wherein the plastic-containing bonding fibers having an average fiber diameter of about 16 um.

38. The air filter of claim 24, wherein the plastic-containing bonding fibers having an average length between about 10 to 127 mm (0.4 to 5 inches).
39. The air filter of claim 24, wherein the plastic-containing bonding fibers having an average length of not greater than about 102 mm (4 inches).
40. The air filter of claim 24, wherein the plastic-containing bonding fibers are between about 5 to 50 wt. % of the air filtration media.
41. The air filter of claim 24, wherein the plastic-containing bonding fibers are between about 10 to 30 wt. % of the air filtration media.
42. The air filter of claim 24, wherein the variation in the gram weight of the air filtration media is $\pm 5\%$ or less.
43. The air filter of claim 24, wherein the plastic-containing bonding fibers are bi-component thermoplastic polymer fibers.
44. The air filter of claim 24, wherein the plastic-containing bonding fibers are mono-component thermoplastic polymer fibers.
45. The air filter of claim 43, wherein the bi-component thermoplastic polymer fibers comprise:
 - a core material; and
 - a sheath material, the sheath material has a melting point temperature that is lower than the melting point temperature of the core material, wherein the sheath material forms the bonds at the points of intersection between the glass fibers and the plastic-containing bonding fibers.
46. The air filter of claim 45, wherein the core material and the sheath material are both thermoplastic polymers.

47. The air filter of claim 45, wherein the core material is a mineral and the sheath material is a thermoplastic polymer.
48. The air filter of claim 45, wherein the core material and the sheath material are same thermoplastic polymer but of different formulation.
49. The air filter of claim 45, wherein the air filter is substantially formaldehyde-free.
50. A method of making glass fiber air filtration media, comprising the steps of:
 - opening bulk glass fibers and bulk plastic-containing bonding fibers;
 - blending the opened glass fibers and the plastic-containing bonding fibers into a fiber blend;
 - condensing the blended fibers into less airy fiber blend using a fiber condenser;
 - forming the fiber blend into an uncured mat having a first and second major sides using a column feeder;
 - applying a non-woven scrim facing layer to at least one of the first and the second major sides; and
 - curing the uncured mat and the non-woven scrim facing layer into the glass fiber air filtration media.
51. The method of claim 50, wherein the glass fibers are virgin rotary glass fibers.
52. The method of claim 50, wherein the glass fibers are loose-fill glass fibers.
53. The method of claim 50, wherein the glass fibers are scrap rotary glass fibers.
54. The method of claim 50, wherein the glass fibers have an average fiber diameter not greater than about 5 microns.

55. The method of claim 50, wherein the glass fibers have an average fiber diameter not greater than about 3 microns.
56. The method of claim 50, wherein the glass fibers have an average length not greater than about 76 mm (3 inches).
57. The method of claim 50, wherein the glass fibers have an average length not greater than about 51 mm (2 inches) in length.
58. The method of claim 50, wherein the plastic-containing bonding fibers having an average fiber diameter not greater than about 20 microns.
59. The method of claim 50, wherein the plastic-containing bonding fibers having an average fiber diameter of about 16 microns.
60. The method of claim 50, wherein the plastic-containing bonding fibers having an average length between about 10 to 127 mm (0.4 to 5 inches).
61. The method of claim 50, wherein the plastic-containing bonding fibers having an average length of not greater than about 102 mm (4 inches).
62. The method of claim 50, wherein the plastic-containing bonding fibers are between about 5 to 50 wt. % of the air filtration media.
63. The method of claim 50, wherein the plastic-containing bonding fibers are between about 10 to 30 wt. % of the air filtration media.
64. The method of claim 50, wherein the variation in the gram weight of the air filtration media is $\pm 5\%$ or less.

65. The method of claim 50, wherein the plastic-containing bonding fibers are bi-component thermoplastic polymer fibers, the plastic-containing bonding fibers form bonds at points of intersection with the glass fibers during the curing step.
66. The method of claim 50, wherein the plastic-containing bonding fibers are mono-component thermoplastic polymer fibers, the plastic-containing bonding fibers form bonds at points of intersection with the glass fibers during the curing step.
67. The method of claim 65, wherein the bi-component thermoplastic polymer fibers comprise:
 - a core material; and
 - a sheath material, the sheath material has a melting point temperature that is lower than the melting point temperature of the core material, wherein the sheath material forms the bonds at the points of intersection between the glass fibers and the plastic-containing bonding fibers.
68. The method of claim 50, wherein the step of opening further comprising the step of weighing the opened fibers to monitor the feed rate of the opened fibers.
69. The method of claim 50, wherein the step of forming the fiber blend into the uncured mat further comprising continuously weighing the uncured mat to ensure that the flow rate of the blended fibers through the fiber condenser and the column feeder is at a desired rate.